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basic imagery interpretation report

Tyuratam Space Launch Site Y1/2 (S)

MISSILE RANGES: STRATEGIC SSM SPACE FACILITIES

USSR

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WNINTEL

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INSTALLATION OR ACTIVITY NAME					COUNTRY
Tyuratam Space Launch Site Y1/2					UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
41TNL50708858	45-56-53N 063-39-15E				
MAP REFERENCE					
SAC. USATC, Series 200, Sheet 0246-13, scale 1:200,000 (UNCLASSIFIED)					
LATEST IMAGERY USED			NEGATION DATE (If required)		
See Abstract			NA		

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ABSTRACT

1. (S/WN) Tyuratam Space Launch Site Y1/2 has been under construction in the eastern section of the Tyuratam Missile and Space Test Center SSM, USSR, since October 1978. This facility is one of several major facilities under construction at the test center to support new Soviet space programs. At the present pace of construction, launch position Y1 will probably be completed by late 1982 and launch position Y2, which is in an early stage of construction, will probably not be completed until 1984 or 1985. No new space launch vehicles have been associated with this launch site. However, analysis of the Y1 launch pad and ground support equipment (GSE) indicates that the launch vehicle will be similar in size to the SL-12/-13 but will use high-energy propellants in the upper stage(s).

2. (S/WN) This report includes a location map; 14 annotated photographs, one with detailed mensuration; two conceptual drawings of associated GSE and one of the launch pads; and an inset table of mensural data. Related activities and construction at Tyuratam ICBM Test Support Facility 3 are also described. The information cutoff date for this report is [REDACTED]

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INTRODUCTION

3. (S/WN) Tyuratam Space Launch Site (LS) Y1/2 (Figure 1) is under construction 1.5 nautical miles (nm) south of Tyuratam ICBM Test Support Facility 3 [REDACTED] Figure 2). The launch site is rail and road connected to Support Facility 3, which is the principal support area associated with this new space-related launch site.

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BASIC DESCRIPTION

4. (S/WN) As of [REDACTED] LS Y1/2 was still under construction. The major site elements under construction include two launch pads (Y1 and Y2), propellant storage and handling facilities, a control center, and an onsite support area (Figure 3). In addition, a construction support camp is 1 nm east of the launch site.

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Launch Position Y1

5. (S/WN) Launch position Y1 (Figure 4) has been under construction since October 1978 and at the present pace of construction will probably be completed by late 1982. The launch vehicle support structure consists of an underground building, a flame bucket, and a launch pad. The launch pad substructure is U-shaped. The 35- by 34- by 11-meter, three-level underground building is under the access apron to the launch pad. Each level consists of five [REDACTED] compartments, except for the center compartment which is [REDACTED] wide. The compartments on each level appear to be interconnected.

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6. (S/WN) The flame bucket is [REDACTED] wide and approximately 23 meters deep. There are approximately seven exhaust troughs built into the floor of the bucket for channeling the exhaust away and upward from the launch pad. Two walls each 23 meters long, 23 meters high, and [REDACTED] thick were constructed on either side of the flame bucket to support the launch pad.

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7. (S/WN) Prefabricated components for the launch pad began arriving at the site in mid-1980 and had been installed by January 1982. The principal components used to assemble the launch pad were a rectangular baseplate [REDACTED] thick with a [REDACTED] aperture (Figures 5 through 7) and 16 subcomponents that varied in size. The installed baseplate bridged the flamebucket

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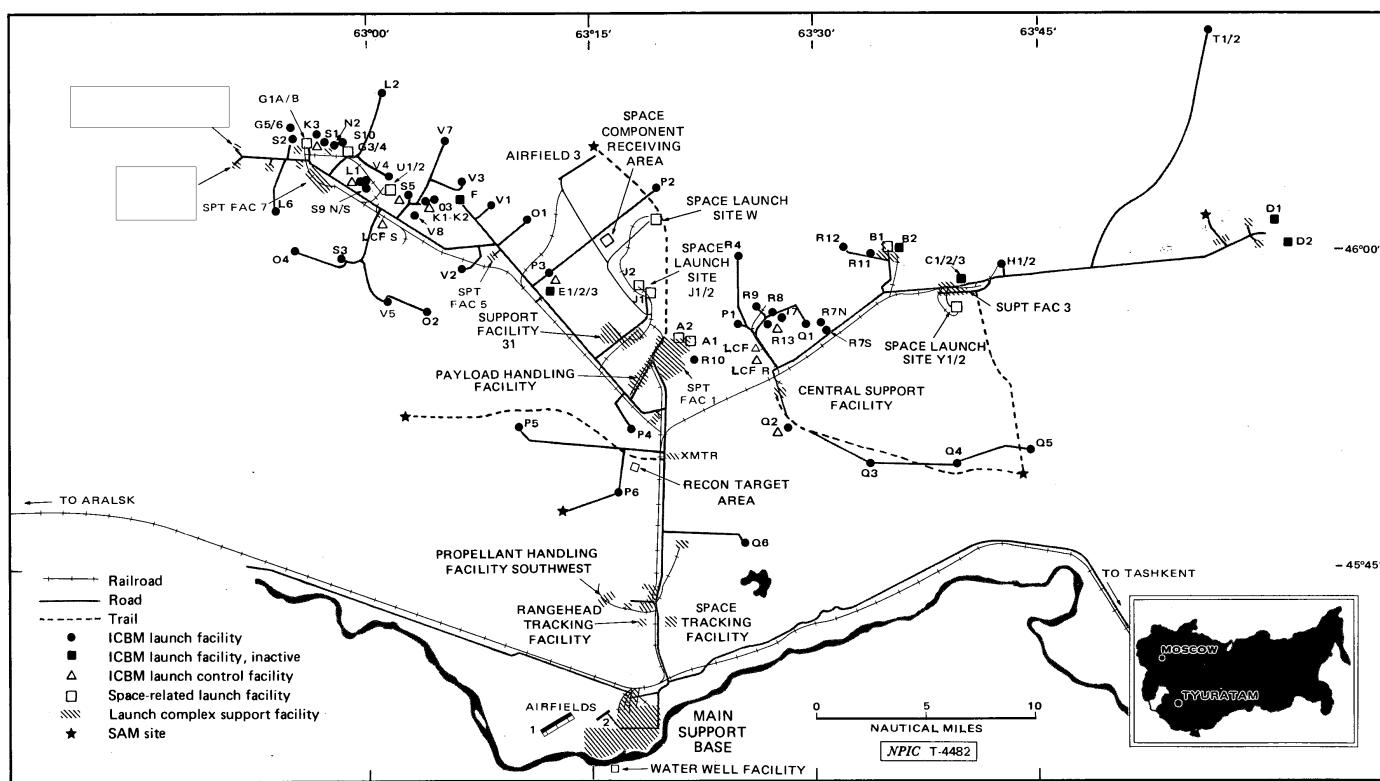


FIGURE 1. LOCATIONS OF TYURATAM SPACE LAUNCH SITE Y1/2 AND TYURATAM ICBM TEST SUPPORT FACILITY 3, TYURATAM MISSILE AND SPACE TEST CENTER, USSR

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and was 3 meters below the top of the service apron (item A, inset, Figure 7). Eight subcomponents, each 3 meters in height, were next assembled around the aperture of the baseplate (items B and C, inset, Figure 7). This assemblage created four wedge-shaped areas situated at 90-degree intervals (Figure 6). Four wedge-shaped subcomponents, also 3 meters in height, were next installed in the wedge-shaped openings around the baseplate aperture (item D, inset, Figure 7). One rectangular box-like component about 1 meter in height was next fitted to the top of each wedge-shaped component to form a launch vehicle support stand (item E, inset, Figure 7). In addition, an area was left open in the service apron to accommodate the hinging mechanism for a probable in-pad erector. By [] a probable in-pad erector had been delivered to the site.

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8. (S/WN) Two lightning arrester towers 113 meters high were erected on either side of the launch pad. Flood lights will be attached to these towers for illumination of the launch area. A launch vehicle service gantry stow area was under construction approximately 286 meters southwest of the launch pad. Several components for a service gantry had been delivered to this area by [] This gantry will probably be similar in design to the SL-12/-13 service gantries used at Tyuratam Space LS U1/2 (BE [] and Space LS G3/4 [])

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9. (S/WN) An extensive network of conduits extends into the area of the launch pad. These conduits are probably for the transfer of propellants, wiring, personnel passageways, and possible water transfer (Figure 3).

Launch Position Y2

10. (S/WN) Launch position Y2 is in an early stage of construction 395 meters east of launch position Y1 (Figure 3). Construction started on this site in September 1981 and will probably not be completed until 1984 or 1985. The precedence for completing one launch site before starting another was established at LS U1/2. Construction of position U1 was almost complete before construction began on position U2. Moreover, launch operations were conducted from position U1 while position U2 was still under construction (Figure 8).

Propellant Facilities

11. (S/WN) Launch Site Y1/2 has both a cryogen propellant storage area and conventional propellant storage area. The cryogen storage area (Figure 9) consists of two dual-walled spherical tanks, eight vertical cylindrical tanks, three arch-roofed buildings, and three lightning arrester towers. The spherical tanks each have a [] inner diameter consisting of 48 gore sections. The outer shell has a diameter of [] and also consists of 48 gore sections. The two spherical tanks are interconnected through a series of pipelines. The eight vertical propellant-associated tanks each have a diameter of [] and share the same platform. The function of these tanks has not been determined but similar tanks are at Tyuratam Space LS W [] and LS J1/2 [] Three arch-roofed buildings, one 66 by 14 meters and two 26 by 14 meters, are adjacent to the spherical tanks. These buildings will probably function as pumping and monitoring stations for propellant transfer and storage. A pipe gallery connects two of the arch-roofed buildings to the spherical tanks. Three lightning arrester towers have been erected in the cryogen storage area.

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12. (S/WN) The cryogen storage area is connected to launch position Y1 via the control center by underground conduit. The spherical tanks have an estimated total capacity of 3,126,920 liters¹ and will probably contain high-energy propellants for the upper stage(s) of the launch vehicle slated for LS Y1/2. The lower stages of the vehicle will probably use conventional propellants which are stored in bunkers near the launch pad. Additionally, the launch vehicles intended for other new space launch sites under construction at Tyuratam will also probably use cryogen propellants in their upper stages since spherical storage tanks are under construction at all of the new space launch facilities.

Launch Control Center

13. (S/WN) The launch control center is centrally located between the two launch pads (Figure 3). The control center consists of two buried buildings, 49 by 34 meters and 37 by 35 meters. The network of conduits constructed throughout the facility passes through the central control center before reaching the launch position. The control center will probably support launches from both launch pads. Also, a forced-draft cooling system was constructed adjacent to the control center.

Onsite Support Area

14. (S/WN) A support area (Figure 3) was under construction approximately 500 meters west of launch position Y1. It consists of three buildings: a three-story building (42 by 16 meters), a one-story building (19 by 13 meters), and a third building (31 by 16 meters) in an early stage of construction. These buildings will be served by a common apron.

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15. (S/WN) Two unidentified circular platforms are in the vicinity of launch position Y1. One of the platforms is currently supporting a tank-like structure with an inner diameter of [] Prefabricated arched-roof sections were installed over the buried circular platforms and tank-like structure. An open trench extended from this area to underground conduits. It is possible that this area might be for water storage.

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16. (S/WN) A cylindrical tank was installed on a rectangular concrete apron approximately 100 meters west of launch position Y1 and is connected to the base of the launch pad by a pipe gallery. The purpose or contents of the tank have not been determined.

Support Facility 3

17. (S/WN) Tyuratam ICBM Test Support Facility 3 (Figure 10) has been used in support of the construction of LS Y1/2 since 1978 and will also be used in support of operational launches from the site. Support Facility 3, however, will also continue to support the SS-17 and SS-18 ICBM programs but at a reduced level.

18. (S/WN) Changes to this facility to support the new space program at LS Y1/2 have included the addition of two buildings, the modification of an existing bunker, and a new possible offloading area. No related modifications were observed in the GSE area or in the instrumentation facility. Extensive expansion was probably not necessary because of the existing facilities which included two vehicle assembly buildings (VABs).

Assembly and Checkout Area

19. (S/WN) The two VABs are within the assembly and checkout area. VAB-A was completed in early 1960 and was used in support of research and development of the SS-7 and then the SS-9 ICBMs. VAB-B, 122 by 56 meters, was completed in 1971. This building has one bay (122 by 30 meters) and is flanked on both sides by administration and shop areas. The construction of VAB-B correlates with the beginning of the flight testing of the SS-17 and SS-18 ICBMs and has been used for assembly and checkout purposes in support of these programs. It was generally believed that VAB-B provided more space than needed to support SS-17 and SS-18 flight testing and may have been originally intended to function as a checkout building for a space vehicle.² Modification to VAB-B has been relatively minor and included an extension to the east end of the building and a probable new telemetry antenna.

20. (S/WN) A probable subcomponent assembly/administration building was the only new building constructed within the assembly and checkout area. Construction, which began on this building in January 1980, was almost complete. This building is 55 by 46 meters and is connected by underground conduit to VAB-B. An additional forced-draft cooling unit was constructed to the rear of this new building.

21. (S/WN) Since May 1981, the drive-in bunker in the assembly and checkout area has been extensively modified. The volume of materials/equipment observed outside the side entrance to the bunker indicates that the bunker has been internally modified. The bunker was also converted to drive through with a rail terminus at the rear of the bunker.

22. (S/WN) A new possible rail offloading area was in the late stages of construction. This area is similar to the existing offloading area which was used for rail-to-road transfer of missile-associated canisters and new GSE arriving at the facility. A support/security building was under construction next to the new possible offloading area. This building and the possible offloading area are cable connected to the new subcomponent assembly/administration building. A road has not yet been constructed to the offloading area allowing for a rail-to-road transfer operation.

Administration and Barracks Area

23. (S/WN) A multistory administration building was in the late stages of construction. The construction of this building coincides with the construction of LS Y1/2 and, to date, represents the only expansion within the administration and barracks area.

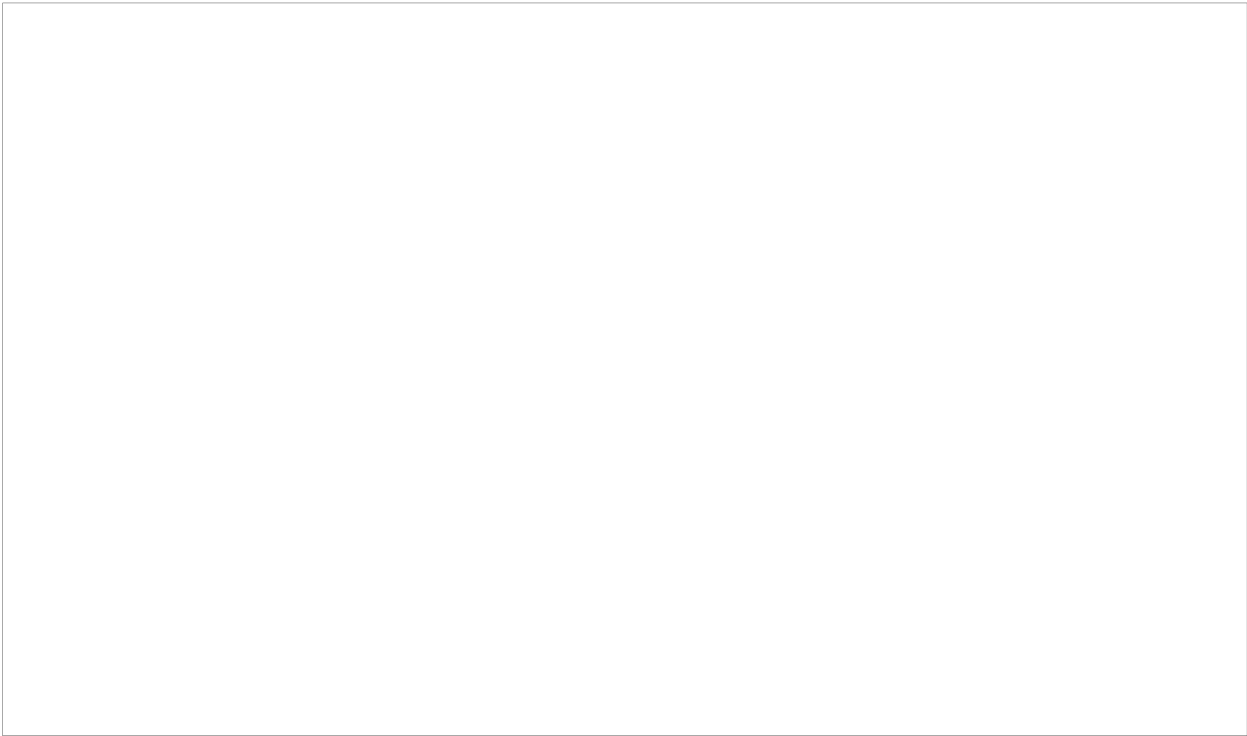
Construction Support Activity

24. (S/WN) A construction material and equipment receiving area was constructed in 1978 at the end of the southernmost railspur serving the assembly and checkout area. This area is served by two rail lines. One of the rail lines extends to a separate offloading point within the receiving area and the second rail line serves a receiving/storage apron with a mobile-bridge gantry crane. The probable in-pad erectors and prefabricated sections for the launch platform were observed in this area.

25. (S/WN) In 1978, a cement batch plant and a construction support area to support the construction of LS Y1/2 was constructed 1 nm east of the support facility.

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Probable Prototype/Mockup Y Vehicle Components

26. (S/WN) [redacted] equipment probably associated with the Y program began arriving at Support Facility 3. Three railcars outside VAB-B contained at least four canvas-covered probable components for a prototype/mockup vehicle that could be used to test handling procedures within the VAB. The diameter of the components is [redacted] and the length of the components are [redacted] (Figure 11). The dimensions of the components were not compatible with any known ICBM systems.

New GSE Associated with the Y Program

27. (S/WN) On [redacted] the substructure of a space launch vehicle (SLV) rail transporter was in the assembly and checkout area at Support Facility 3. By [redacted] the transporter had been assembled and was in front of VAB-B. A second transporter of this type was subsequently identified at Support Facility 3 (Figure 12). Both new transporters consist of a set of railcars (Figure 13). The longer railcar is approximately 46 meters long and will probably be used to transport the launch vehicle within the support facility. The other railcar is approximately 21 meters long and may be associated with the payload. The size and configuration of this rail transporter closely resemble those of the rail transporter type B used in Support Facility 7 [redacted] for the SL-12/-13 vehicle (inset, Figure 12).

28. (S/WN) A second type rail transporter had been delivered to the facility by [redacted] The transporter is approximately 40 meters long with a cradle 32 meters in length (Figure 14). Although this transporter is unique to the Y program, it has physical characteristics common to other transporters/erectors. The cradle mounted atop of the 40-meter section was inclined at approximately 7 degrees (Figure 15). The second type transporter may be used to transport the Y vehicle to LS Y1/2. During June 1982, compatibility testing involving the new 40-meter transporter was underway at launch position Y1. The

transporter was on the approach to the launch pad and the probable in-pad erector was horizontally elevated (Figure 16). Subsequently, the transporter was moved forward toward the pad under the erecting arm. During the latter phase of testing, a 46-meter load simulator was placed atop of the erecting arm within the cradle of the transporter. Throughout the compatibility testing, it appeared that the hinge mechanism was not connected to the pad, suggesting that the probable in-pad erector may have additional functions.

Support of SS-18 and SS-17 ICBMs at Support Facility 3

29. (S/WN) In August 1981, there was a significant decrease in the amount of the SS-18 rail traffic within the facility. The normal complement of SS-18-associated canisters is three completed sets of an SS-18 MOD-4 and at least two expended canister sections. By June 1981, there were indications that some of the SS-18 support was being transferred to Tyuratam Central Support Facility [redacted]. SS-18 lower and upper canisters and [redacted] MOD-4-associated containers were being stored in front of a two-bay, rail-served building located in the storage area within the Central Support Facility. Additional indications of a decrease in the support role for the SS-18 at Support Facility 3 was observed in late 1981. Probable portions of partially dismantled multisystem propellant transporters (MSPTs) associated with fourth-generation ICBMs were observed in late 1981 and early 1982. In March 1982, three MSPTs with prime movers were on railcars at the loading/unloading point outside the GSE area. Normally, new equipment arriving at the facility is received in the assembly and checkout area. The normal complement of MSPTs maintained within the GSE area had been nine; however, in late March 1982, no MSPTs were observed within the facility. There is space available within the GSE area to house the MSPTs, although prior activity suggests that the propellant transporters have been removed from the area.

30. (S/WN) The normal low level of activity associated with the support of the SS-17 ICBM for crew training at the range has continued, although the number of 24-meter missile-associated railcars observed within the facility has decreased.

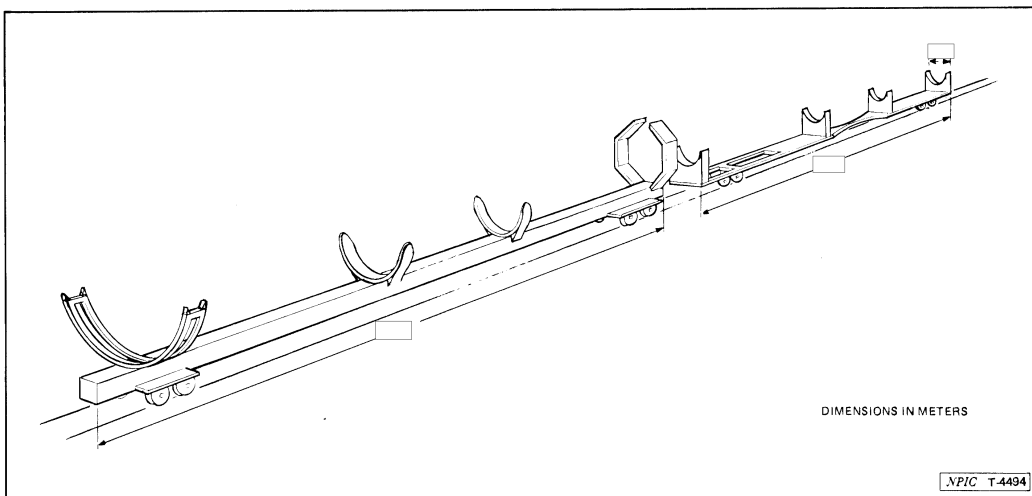
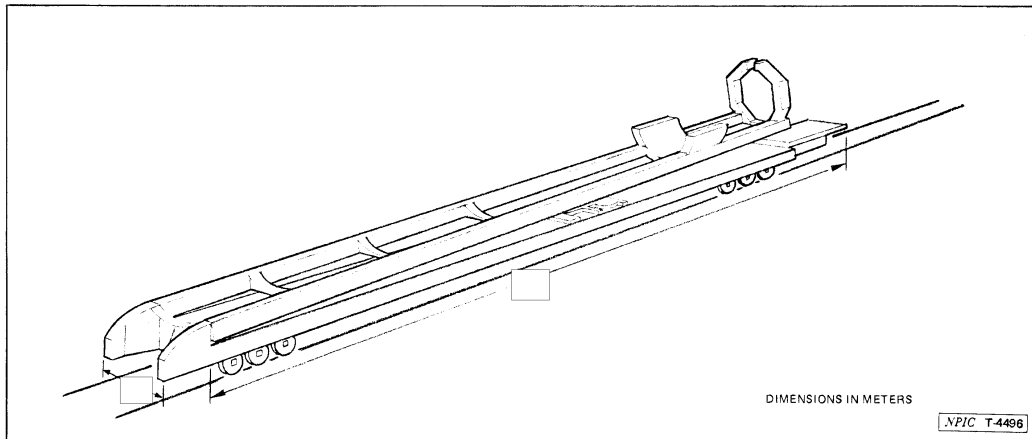


FIGURE 13. CONCEPTUAL DRAWING OF NEW RAIL TRANSPORTER FOR INTRA-FACILITY USE

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FIGURE 15. CONCEPTUAL DRAWING OF NEW RAIL TRANSPORTER FOR TRANSPORTING VEHICLE TO LAUNCH PADS

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SECRET**REFERENCES****IMAGERY**

(S/WN) All applicable satellite imagery acquired through [] was used in the preparation of this report.

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MAPS OR CHARTS

DMAAC. USATC, Series 200, Sheet M0246-13HL, 8th ed, Dec 73, scale 1:200,000 (SECRET, [])

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DOCUMENTS

1. CIA/NFAC. IS 81-10149, *Construction at Launch Site Y, Tyuratam Missile/Space Test Center, USSR, February 1980-September 1981*, Dec 81 (SECRET, [])

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2. NPIC. [] RCA-15/0005/75, *Tyuratam ICBM Test Support Facility* 3, Oct 74 (TOP SECRET [])

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RELATED DOCUMENT

FTD. TCS NBR 384199/81, Work Order NR 81-512, *Line Drawing of Spherical Tank, Tyuratam MTC Space Sites J, W, and Y (TSR)*, 13 Feb 81 (TOP SECRET [])

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REQUIREMENT

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